

Amendments to Claims

Listing of Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

What is claimed is:

1. (Currently amended) An optical communications system employing radio frequency signals, the system comprising:
 - a central unit;
 - at least one remote unit which provides a radio connection point for mobile terminals in an associated coverage area, the at least one remote unit comprising, ~~said remote unit having~~ at least one optoelectronic transducer for converting optical data signals to radio frequency signals and converting radio signals to optical signals, ~~and~~ at least one antenna to receive and send radio frequency signals;
 - at least one optical fiber data link between the central unit and the at least one remote unit for transmitting optical data signals therebetween; and
 - at least one optical fiber power link between the central unit and the at least one remote unit for providing electrical power at the at least one remote unit.
2. (Currently amended) The optical ~~fiber~~ communications system according to claim 1 wherein the at least one optoelectronic transducer comprises an electroabsorption transceiver.
3. (Currently amended) The optical communications system according to claim 1 wherein the at least one optoelectronic transducer ~~remote unit~~ comprises a first optoelectronic transducer for converting optical data signals to radio frequency signals and a second optoelectronic transducer for converting radio frequency signals to optical signals.

4. (Currently amended) The optical ~~fiber~~-communications system according to claim 3 wherein the first and second optoelectronic transducers are low power consumption devices.

5. (Currently amended) The optical ~~fiber~~-communications system according to claim 4 wherein the second optoelectronic transducer comprises a VCSEL laser.

6. (Currently amended) The optical ~~fiber~~-communications system according to claim 3 wherein the second optoelectronic transducer comprises an edge-emitting laser.

7. (Currently amended) The optical ~~fiber~~-communications system according to claim 1 wherein the radio frequency signals are analog.

8. (Currently amended) The optical ~~fiber~~-communications system according to claim 1 wherein the optical fiber data link is uni-directional.

9. (Currently amended) The optical ~~fiber~~-communications system according to claim 8 wherein the uni-directional optical fiber data link is in a direction from the central unit to the at least one remote unit.

10. (Currently amended) The optical ~~fiber~~-communications system according to claim 8 wherein the uni-directional optical fiber data link is in a direction from the at least one remote unit to the central unit.

11. (Currently amended) The optical ~~fiber~~-communications system according to claim 1 wherein an optical fiber transports both the optical fiber data link and the optical fiber power link using wavelength division multiplexing.

12. (Currently amended) The optical ~~fiber~~-communications system according to claim 1 wherein the radio frequency signals are used in a wireless communications system.

13. (Currently amended) The optical ~~fiber~~-communications system according to claim 12 wherein the radio frequency signals comprise multiple radio carriers within multiple frequency bands with multiple protocols.

14. (Currently amended) The optical communications system according to claim 1 wherein the at least one remote unit comprises a first antenna to receive radio frequency signals and a second antenna to send radio frequency signals.

15. (Currently amended) An optical communications system employing radio frequency signals, the system comprising:

a central unit;

at least one remote unit ~~comprising, said remote unit having~~ means for converting optical data signals to radio frequency signals, ~~means for~~ and converting radio signals to optical signals, and at least one antenna to receive and send radio frequency signals;

at least one optical fiber data link between the central unit and the remote unit for transmitting optical data signals therebetween; and

at least one optical fiber power link between the central unit and the remote unit for providing electrical power at the remote unit, the at least one remote unit further including means for converting optical power from the at least one optical fiber power link into electrical power, and means for converting the electrical power into a form that is required to power the means for converting optical data signals to radio frequency signals.

16. (Currently amended) A method for communicating between a central unit and ~~at least one~~ a remote unit, said method comprising:

~~transmitting~~ receiving an optical data signal from the central unit ~~at to~~ the remote unit through an optical fiber data link; ~~and~~

receiving ~~transmitting~~ radiation from the central unit ~~at to~~ the remote unit through an optical fiber power link to electrically power the remote unit;

converting the optical data signal to a radio frequency signal at the remote unit through an optoelectronic transducer;

amplifying the radio frequency signal using electrical power obtained from the radiation in the optical fiber power link to provide an amplified radio frequency signal; and

sending the amplified radio frequency signal into free space through at least one antenna connected to the remote unit.

17. (Currently amended) A method for communicating between a central unit and at least one remote unit, said method comprising:

~~receiving transmitting~~ radiation from the central unit ~~at~~ to the at least one remote unit through an optical fiber power link to electrically power the remote unit;

receiving a radio frequency signal from at least one antenna connected to the at least one remote unit;

amplifying the radio frequency signal using electrical power obtained from the radiation in the optical fiber power link to provide an amplified radio frequency signal;

converting the amplified radio frequency signal to an optical data signal at the at least one remote unit through an optoelectronic transducer; and

transmitting the optical data signal to the central unit through an optical fiber data link.

18. (Currently amended) An optical communications system employing radio frequency signals, the system comprising:

a central unit;

at least one remote unit, said remote unit having means for converting optical data signals to radio frequency signals and converting radio frequency signals to optical data signals, means for converting optical data signals into baseband digital signals and converting baseband digital signals to optical data signals, and at least one antenna to receive and send radio frequency signals;

at least one optical fiber data link between the central unit and the remote unit for transmitting optical data signals therebetween; and

at least one optical fiber power link between the central unit and the remote unit for providing electrical power at the remote unit.

19. (Currently amended) The optical ~~fiber~~-communications system according to claim 18 wherein the baseband digital signals are used in a local area network protocol.

20. (Currently amended) The optical ~~fiber~~-communications system according to claim 19 wherein the local area network protocol is Ethernet.

21. (Currently amended) A remote terminal in an optical communications system employing radio frequency signals, said remote terminal connected with a central unit via at least one optical fiber, said remote terminal provides a radio connection point for mobile terminals in an associated coverage area, said remote terminal and comprising:

at least one antenna to receive and send radio frequency signals;

at least one optoelectronic transducer for converting optical data signals to radio frequency signals ~~from~~ for the antenna and for converting radio signals to optical signals for transmission to the central unit; and

means for converting radiation transmitted from the central unit to electrically power the remote unit.

22. (New) The optical communications system according to claim 1, wherein:
the at least one remote unit comprises a photovoltaic converter for converting optical power from the at least one optical fiber power link into electrical power, and an amplifier coupled between the at least one optoelectronic transducer and the at least one antenna, the amplifier amplifies the radio frequency signals for transmission to the mobile terminals, the amplifier is coupled to the photovoltaic converter for receiving the electrical power.

23. (New) The optical communications system according to claim 1, wherein:
the at least one remote unit comprises at least one active component, a photovoltaic converter for converting optical power from the at least one optical fiber power link into electrical power, and a regulator for converting the electrical power into a form that is required to power the at least one active component.

24. (New) The optical communications system according to claim 23, wherein:

the regulator converts the electrical power into a constant voltage or a constant current form.

25. (New) The optical communications system according to claim 1, wherein:
the central unit comprises a first, high power laser diode coupled to the at least one optical fiber power link and a second laser diode coupled to the at least one optical fiber data link.

26. (New) The optical communications system according to claim 25, wherein:
the high power laser diode provides radiation on the at least one optical fiber power link with a power of about 500 mW.

27. (New) The optical communications system according to claim 25 wherein:
the high power laser diode provides radiation on the at least one optical fiber power link with a power of at least 2 W.

28. (New) The optical communications system according to claim 1, further comprising:
a plurality of remote units, each providing a radio connection point for mobile terminals in associated coverage areas;
at least one optical fiber data link between the central unit and each of the remote units for transmitting optical data signals therebetween; and
at least one optical fiber power link between the central unit and each of the remote units for providing electrical power at each of the remote units.

29. (New) The optical communications system according to claim 15, wherein:
the means for converting the electrical power converts the electrical power into a constant voltage or a constant current form.

30. (New) The optical communications system of claim 18, wherein:

the at least one remote unit provides a radio connection point for mobile terminals in an associated coverage area, and the means for converting optical data signals into baseband digital signals and converting baseband digital signals to optical data signals communicates with a local area network.